CENTER for INTERNATIONAL ENVIRONMENTAL LAW

Legal Models to Control Primary Plastic Polymer Production:

Key Elements to Consider in the Context of a Treaty to End Plastic Pollution

Introduction

Current and projected levels of plastic production are severely undermining any potential solution to end plastic pollution. To effectively address the climate crisis, safeguard human health, ensure the enjoyment of human rights, and mitigate biodiversity loss, the future plastics treaty must control and reduce the production of primary plastic polymers.[i] In the lead-up to the fourth session of the Intergovernmental Negotiating Committee to advance a plastics treaty (INC-4), committee members are considering various options for the optimal design of these control measures.

Parties to other Multilateral Environmental Agreements (MEAs) have previously reached agreements to address pollution at its source. These agreements typically adopt control measures and obligations aiming to phase down or phase out the production of specific substances. The plastics treaty will not be pioneering in this regard. Consequently, committee members should build on previous experiences to design the most effective control measures to reduce polymer production.

Importantly, control measures are insufficient to guarantee effective action by themselves. Clear implementation and compliance mechanisms are necessary. Existing models on controls of production in MEAs also provide key insights into the implementation and compliance mechanisms required for obligations to effectively phase down primary plastic polymer production, thereby enabling the fulfillment of the mandate that established the INC and set the scope of the future treaty — United Nations Environment Assembly (UNEA) Resolution 5/14.

This brief aims to inform the plastic treaty negotiations by analyzing and comparing three models used in MEAs to control the production of specific substances or the emissions of greenhouse gasses (GHG). Its goal is to draw lessons from these models and translate them into specific recommendations to enhance the options currently under consideration ahead of INC-4.

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i. Primary Plastic Polymers can be defined as large synthetic molecules composed of smaller units called monomers. They are bonded together with the help of chemicals. To put it another way, primary plastic polymers are macromolecules characterized by the sequence of one or more types of monomer units. These polymers, as well as the monomers and other chemicals used in their production, are manufactured from either fossil-based or bio-based feedstocks. For further details on the definition of primary plastic polymers, see CIEL's brief Plastic Polymers under the Full Life Cycle Approach: Key Considerations on the Scope of the Future Plastics Treaty and CIEL's Compilation of Key Terms Relevant for the Negotiation of a Treaty to End Plastic Pollution.

Existing Legal Models for Controlling Primary Plastic Polymer Production

The Montreal Protocol, the Kyoto Protocol, and the Paris Agreement each include obligations to control and phase down the production of specific substances, thus addressing pollution at the source, or GHG emissions. At the time of writing (April 2024), the INC is considering options to control polymer production, including strategies used in these MEAs, ranging from voluntary to legally binding actions, reporting obligations, and implementation and compliance mechanisms. The effectiveness of these MEAs has varied widely, and negotiators should consider this when designing a plastic treaty that is fit for purpose. A summary table of this analysis is in the Annex of this issue brief.

The Montreal Protocol

The Montreal Protocol[1] on Substances that Deplete the Ozone Layer (the Montreal Protocol) aims to phase out the production and consumption of ozone-depleting substances (ODS).[2] The Montreal Protocol sits under the Vienna Convention for the Protection of the Ozone Layer (The Vienna Convention).[ii]

Key Elements of the Production Controls

The Montreal Protocol sets forth legally binding schedules for gradually reducing and eliminating selected ODS.[3] **These schedules include globally agreed-upon reduction targets that each Party must implement at the national level. These targets increase progressively over time, aiming to phase out and phase down the production and use of ODS in accordance with the Protocol's provisions.**

These targets possess, among others, four key characteristics[iii] that the INC should consider when evaluating models to control plastic polymer production.

Consideration of imports and exports in production controls

The Protocol places obligations on consumption levels, **defined as the sum of the annual production levels[4] and imports, minus exports** of the controlled substances.[iv] Exports subtracted from one State's consumption will be added to another State's consumption equation as imports.[5]

Including imports and exports in the calculation mechanism is crucial because it allows trade among Parties while preventing Parties from increasing imports from another Party to delay or avoid compliance.[6] As of January 1, 1993, any export of controlled substances to non-Parties shall not be subtracted when calculating the consumption levels of the exporting Party.[7] As a result, Parties can only export to non-Parties by reducing their domestic consumption levels.[v]

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ii. Vienna Convention for the Protection of the Ozone Layer, 22 March 1985, vol. 1513. The Vienna Convention was adopted in 1985 following international discussion of scientific discoveries in the 1970s and 1980s highlighting the adverse effect of human activity on ozone levels in the stratosphere and the discovery of the 'ozone hole'. Its objectives are to promote cooperation on the adverse effects of human activities on the ozone layer.

iii. It is important to mention that the Protocol has been adjusted and amended over time to include new ODS and national reduction targets for each of them. The elements discussed in this section are based on an overall view of the latest version of the Protocol, which already includes these amendments.

iv. In the case of trade between two Parties to the agreement, exports that are subtracted from the consumption of one State and will be added to the consumption equation of another State as imports. Because the importing Party must keep its consumption within the limits set by the Protocol, allowing Parties to subtract exports from their own consumption equations has no net effect on the overall reductions of controlled substances. However, beginning on 1 January 1993, any export of controlled substances to non-Parties shall not be subtracted in calculating the consumption level of the exporting Party (Article 3, paragraph 1c).

v. Indeed, when calculating their level of consumption, each Party can subtract their level of exports from their level of production and imports. However, this is not the case for exports to non-Parties since January 1, 1993. Montreal Protocol, Article 3(c).

As the Montreal Protocol's control schedules progressively restrict domestic consumption limits, Parties can be expected to reduce their exports to non-Parties to preserve the limited substances supplies for domestic consumption.[8] This reduction in substance exports, in turn, encourages ratification of and compliance with the Montreal Protocol by countries that need access to substance supplies.

Baselines

Baselines are the reference point for calculating the reduction targets and monitoring progress over time. Baselines **are the consumption levels of specific substances in a particular year or, for some substances, over a period of years.**[9] Calculating the baseline over a period of years aims to capture variances in production over that period. States must report to the Secretariat their consumption levels corresponding to baseline years after becoming a Party to the Protocol.[10]

Baselines vary within the Protocol. Each group of controlled substances is assigned its own baseline years, reflecting the historical data specific to those substances. Baselines within the same group of substances can also vary among groups of countries.[11] For some States, baselines are past years, indicating they cannot ramp up production before the reduction begins. For others, they are future years, allowing for increased production before reduction starts.[12]

Progressivity in reduction targets

The Protocol establishes different schedules for groups of controlled substances, each with increasing reduction targets. They all have common elements: reduction targets expressed as i) **a maximum allowable percentage of the baseline;** ii) **clear starting dates** (e.g., January 1, 1991); and iii) **established periodicity** (every 12 months after the starting date).[13] Additionally, all phaseout or phasedown schedules for controlled substances begin with a freeze, indicating no increase in consumption levels compared to the baseline.[14]

The Protocol offers flexibility, allowing Parties to exceed targets only if authorized to meet essential uses or domestic needs.[15] For a controlled substance's use to qualify as 'essential,' it must be necessary for health, safety, or critical societal functioning, with no available technically and economically feasible alternatives or substitutes that are acceptable from the standpoint of environment and health.[16]

Special conditions for developing countries

The Protocol defines developing countries based on their per capita consumption of controlled substances.[17] It categorizes countries into 'Article 5' States (developed) and 'non-Article 5' States (developing). Under the Kigali Amendment to the Montreal Protocol,[18] Article 5 countries are further subdivided into two subgroups. These countries receive special considerations, including extended timelines for meeting reduction targets,[19] setting future baselines[20] (allowing production to increase before reducing), and flexibility to increase consumption to meet essential uses and domestic needs.[21]

It is important to note that the Protocol requires Parties to assess and review control measures based on the available scientific information.[22] As a result, the Protocol has undergone six[23] amendments[vi] to strengthen production controls by accelerating phaseout or phasedown schedules and expanding the list of controlled substances.[24, 25]

vi. Amendments to the Protocol can be made with a 2/3 majority vote and are then subject to ratification by the Parties. Only those that ratify the Amendments are bound by them, although States that ratify the Protocol are bound by any Amendments in force at the time of ratification. Moreover, the Montreal Protocol is designed to allow for adjustments when scientific understanding or political willingness to address the issue changes. Adjustments require the consent of 2/3 of the Parties, representing a majority of both developed and developing countries. They become binding on all Parties six months after they are formally notified about them, even those States that did not vote in favor of them and do not require ratification. Adjustments have taken place at meetings of the Parties and other negotiations and have addressed such issues as faster phaseout of certain chemicals.

The amendments were prompted by concerns that some substances were being substituted with similar ones that posed comparable threats to the ozone layer and by scientific advancements revealing that the initial conclusions regarding the extent of ozone depletion were significantly underestimated.[26]

The Protocol includes complementary measures to ensure the achievement of the reduction targets, such as restrictions in trade between Parties and non-Parties[27] and national measures like licensing systems.[28]

Key Elements for Reporting, Monitoring, and Compliance

The Protocol mandates different types of reports. When a country becomes a Party to the Agreement, it must submit an initial report to establish the consumption levels over the baseline years. Those include data on production, imports, and exports of controlled substances. Subsequently, countries are required to submit annual reports containing consumption data for the prior year.[29] These reports enable monitoring of countries' progress toward achievement of the targets and foster compliance with production controls.

The Protocol mandates the consideration and approval of mechanisms for determining and treating non-compliance at the first Meeting of Parties (MoP).[30] Although the first MoP did not approve these provisions, it established an open-ended ad hoc working group[31] that developed the initial non-compliance procedures, which the MoP then adopted at its fourth meeting in 1992.[32] Detailed compliance provisions, including incentives and disincentives, were later adopted to clarify the process.[33] Additionally, the MoP can provide assistance, issue cautions, or suspend rights and benefits.[34]

If a Party fails to meet its obligations, it may voluntarily provide a written explanation to the Secretariat, which will then be forwarded to the Implementation Committee for prompt review.[35] The Secretariat can also request information from a Party if it has compliance concerns or upon another Party's request with supporting evidence. If a Party does not reply within three months or if concerns persist, the Secretariat includes it in the report to the MoP.[36] Transmission of submissions, information, and observations to the Implementation Committee must occur within six months, followed by relevant recommendations to the MoP.[37] The Implementation Committee regularly meets to discuss non-compliance and offers detailed recommendations, including technical support and warnings about possible cessation of exports to non-compliant Parties.[38]

Effectiveness

The Protocol has successfully achieved its objective: protecting the ozone layer by controlling substances that deplete it. To date, Protocol Parties have phased out 98% of ODS globally compared to 1990 levels.[39] Scientific evidence indicates significant positive effects on ozone layer recovery.[40] Notably, it is the only planetary boundary showing improvement.[41] Framed as one of the most effective and successful MEAs, the Montreal Protocol is the first treaty with universal adoption (197 countries). It has spurred research and innovation for safer ODS alternatives and substitutes.[42]

The Kyoto Protocol

The Kyoto Protocol[43] falls under the United Nations Framework Convention on Climate Change (UNFCCC).[44] Adopted in 1997, it predates the Paris Agreement and was the first addition to the UNFCCC. It aimed to limit and reduce greenhouse gasses (GHG) emissions in industrialized countries.

As under the Montreal Protocol, the primary feature of production controls in the Kyoto Protocol is the agreed-upon targets for reduction applied at the national level. Additionally, the Kyoto Protocol includes a collective target, which is absent in the Montreal Protocol. However, there are three main differences between the two models. First, reduction targets apply only to a specific number of countries[45] that appear in Annex I of the Protocol as 'industrialized.' Second, the Kyoto Protocol does not establish progressive phasedown schedules with targets that increase over time. Instead, it sets one unique reduction target per country for each commitment period. Targets for the second commitment period are more ambitious than those set for the first.[vii] Third, countries can trade emissions allowances to meet their emission reduction targets.

Baselines

The Kyoto Protocol establishes a point of reference for the collective and national reduction targets that apply to Parties in Annex I of the UNFCCC.[46] Unlike the Montreal Protocol, it features an almost unified baseline without differentiation for countries or types of GHGs, with two exceptions. Parties may choose between 1990 and 1995 as the baseline year for fluorinated greenhouse gasses (F-gasses).[47] Additionally, Parties transitioning to a market economy[viii] can select a historical year or period other than 1990.[48] Similarly to the Montreal Protocol, countries report their GHG emissions levels corresponding to baseline years after becoming a Party.[49]

A collective target

The Kyoto Protocol sets a collective target for industrialized countries listed under Annex I of the UNFCCC. This target mandates that these Parties must reduce their aggregate emissions of the greenhouse gasses (GHGs) listed in an annex, expressed in carbon dioxide equivalent (CO_2e), by at least 5% below 1990 levels from 2008-2012.[50] Countries agreed to a new target for a second commitment period spanning 2013-2020, aiming to reduce emissions by at least 18% below 1990 levels within that time frame.[51] Three elements characterize these collective targets: i) **a reduction goal;** ii) **a baseline,** meaning a reference point for that goal; and iii) **a collectively agreed time frame to achieve it.**

National targets for selected Parties

The Protocol controls GHG emissions only for a specific group of Parties and leaves those not in Annex I of the UNFCCC without any type of control.[52] Unlike the Montreal Protocol, it establishes a single target unique to each country.[53] Parties were required to meet their individual corresponding targets for a specific interval (e.g., from 2008 to 2012), and targets were expressed as a maximum allowable percentage of baseline levels.[54] Some countries have national targets that do not mandate a reduction in production over baseline levels but rather allow for an increase from historic baseline levels.[55]

vii. During the second commitment period, Parties committed to reduce GHG emissions by at least 18 percent below 1990 levels in the eight-year period from 2013 to 2020. The composition of Parties in the second commitment period is different from the first.

viii. Countries that were part of socialist regimes, covering Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russian Federation, Romania, Slovakia, Slovenia, Ukraine (listed Annex B of the Kyoto Protocol).

Tradable allowances

The Kyoto Protocol enables Annex I Parties to achieve their national targets by obtaining 'emission reduction units,'[56] each equivalent to one metric tonne of CO2.[ix] This market-based mechanism is called a 'cap and trade' scheme, where participating countries have emission reduction targets, collectively forming a 'cap' on total emissions. Countries that exceed their allocated emissions can purchase 'allowances' from countries with surplus emissions credits. Countries may have surplus emissions credits resulting from actual emissions reductions or from carbon offsets or projects that capture emissions in carbon sinks (e.g., reforestation projects).[57, 58] Under this framework, Parties can meet their targets without only directly reducing GHG emissions. They can instead relocate emissions and circumvent domestic reductions.

Reporting, Monitoring, and Compliance

Parties must submit three reports to the Secretariat: an annual report with an emissions inventory and additional information to demonstrate compliance with the Protocol and a periodic national communication that contains accumulated data every four years.[59] Additionally, Parties report baseline year emissions at the beginning of the commitment period and submit a report by the end, at a time referred to as the 'true-up period.'[60]

The Kyoto Protocol compliance mechanism consists of facilitative and enforcement branches featuring detailed procedures for consideration of non-compliance.[61] If a country is found non-compliant regarding methodological and reporting requirements, it must devise a plan to help bring it back into compliance. Substantial non-compliance mandates immediate action to avoid losing access to offsets and emissions trading. Failure to comply with emission reduction targets requires corrective measures, potentially leading to an additional 30% reduction in emissions during the next commitment period.[62] To date, issues addressed by the Compliance Committee mainly pertain to delayed report submissions or adherence to eligibility, methodological, and other reporting requirements.[63] There has been no non-compliance with emission targets, so the Compliance Committee has not used the mechanism to further limit the next emission target.

Effectiveness

While Parties with reduction obligations under the Kyoto Protocol have met the agreed targets, the Protocol itself has failed to achieve necessary GHG emissions reductions globally because the countries with commitments to emissions reduction only account for 18% of global GHG emissions. By the end of the first commitment period in 2012, global emissions had risen by 44% from 1997 levels.[64] Several factors contributed to this failure. The United States and Canada withdrew from the Kyoto Protocol in 2001 and 2012, respectively, and both countries' emissions increased significantly from 1990 levels. That withdrawal also sent a significant political signal by refusing to commit to reductions. Additionally, although the largest historical emitters were listed in Annex I in 1997, by 2006, non-Annex I countries emerged as the main GHG emitters[65] — and they have no reduction obligations under the Protocol.

Moreover, the mechanism of tradable allowances within the Kyoto Protocol has proved relatively inefficient in reducing GHG emissions. While it may redistribute emissions, it has failed to reduce them. First, it relocates emissions, mostly to countries with weaker institutional capacity and regulations.[66] Second, it enables

ix. Additionally, countries can acquire allowances from : (i) investing in: : (i) projects that generate emission reductions in another Annex I Party , under Joint Implementation (JI) and (ii) in projects in non-Annex I countries, and (iii) under the Clean Development Mechanism (CDM).

countries to rely on offsets, which have various human rights implications[67] and have failed to achieve effective GHG emissions reductions.[68] The market of allowances has been extremely volatile, and this mechanism has led to increased regulatory complexity.[69]

The Paris Agreement

The Paris Agreement,[70] adopted in 2015 under the auspices of the UNFCCC, aims to address the loopholes and failures of the Kyoto Protocol by enhancing the implementation of the UNFCCC and strengthening a global response to the threat of climate change.[71]

Key Elements of the Production Controls

Like the Kyoto Protocol, the Paris Agreement sets a collective target, this time for all Parties - instead of selected ones only. The main difference from its predecessors is that it sets out a more flexible framework where countries determine their own nationally determined contributions (NDCs) toward reaching the Agreement's objective. Parties set their own NDCs instead of the Agreement outlining specific reduction targets for each country.[72] The theory was that each Party would set ambitious enough NDCs, and the combination of all would collectively achieve the global target. It has unfortunately proved ineffective thus far.

A global target

The Paris Agreement establishes a long-term temperature goal.[73] In contrast to the Kyoto Protocol, the Paris Agreement does not prescribe targets for GHG emission reductions. Instead, it sets a global objective, providing a framework for collective actions toward limiting temperature rise to 1.5ºC.[74] Additionally, the Paris Agreement introduces a universal commitment applicable to all Parties rather than only to select groups of countries, as seen in the Kyoto Protocol.

Nationally Determined Contributions

Instead of globally agreed-upon legally binding targets for each of its Parties, the Paris Agreement allows countries to define their own GHG reduction commitments unilaterally.[75] Under NDCs, countries can put forward their own national proposals toward the long-term goals of the Paris Agreement. The Paris Agreement only requires countries to report their NDCs transparently every five years and in accordance with the rules subsequently adopted at COP24 in 2018.[76] Countries themselves determine the scope and how robust the NDCs will be.

Reporting, Monitoring, and Compliance

While the UNFCCC and Kyoto Protocol developed a detailed Monitoring, Reporting, and Verification (MRV) framework, this is set to be replaced in large part by the Paris Agreement's Enhanced Transparency Framework (ETF) by the end of 2024 at the latest.[77] The ETF includes a national inventory report of anthropogenic emissions by sources and removals by sinks of GHG gasses, information necessary to track progress made in implementing and achieving NDCs, information related to climate change impacts and adaptation, and financial, technical, and capacity-building support given or received for implementation of the Paris Agreement.[78] The information provided by Parties will then undergo a 'technical expert review.'[79]

The provisions in the Paris Agreement for implementation and compliance are limited[80] as there are no penalties or compliance mechanisms available if a Party does not meet its NDCs. The Paris Agreement Implementation and Compliance Committee (PAICC) can address various issues, including non-submission of NDCs and ETF information, failure by developed countries to communicate financial commitments, lack of participation in progress review, and, finally, persistent lack of transparency in a Party's

information, but only with Party consent.[81] Since its establishment, the PAICC has convened regularly and submitted four reports to the COP detailing meetings and actions taken related to compliance.[82] To date, these actions primarily involved issuing information requests to two Parties that missed submission deadlines.[83]

Effectiveness

Even if fully implemented, States' NDCs under the Paris Agreement remain woefully inadequate to limit warming to 1.5˚C.[84] The fact that the NDCs are not collectively agreed upon but unilaterally determined by each Party based on their own level of ambition and national capabilities makes achieving meaningful GHG emissions reductions challenging. There is an 'ambition gap' between the countries' cumulative NDCs and what is scientifically necessary to avoid the worst climate impacts. Indeed, current commitments are estimated to allow an increase in global average temperatures between 2.5˚C and 3.7˚C by 2100, well outside safe levels and largely beyond the collectively agreed objective of 1.5˚C.[85] Even more concerning, between January 2023 and January 2024, the average temperatures were already 1.5˚C above pre-industrial levels[86]

Five Key Takeaways for the Plastics Treaty Negotiations

1. Voluntary and nationally determined commitments do not work

When considering effective national action to meet global targets, NDCs prove insufficient. Countries' commitments under the Paris Agreement fail to align with the necessary GHG emissions reductions to reach the agreed global target or even set the planet on a 1.5˚C aligned pathway.[87] In contrast, the legally binding national targets of the Montreal Protocol and the Kyoto Protocol have proven effective in achieving collective objectives.[88] It is important to highlight another key lesson brought by the Kyoto Protocol: every country should do its part and be subject to obligations. The future treaty can consider national circumstances and capabilities through approaches that do not rely on the individual and voluntary definition of targets (such as the Paris Agreement model) or the lack of obligations (as in the Kyoto Protocol model). Instead, they can rely, for instance, on differentiated baselines or slower phasedown schedules for specific countries (as in the Montreal Protocol).

2. Having a mandatory global target is key but not sufficient

The global target outlined in the Paris Agreement to limit the temperature increase to 1.5˚C from pre-industrial levels has proven beneficial while at the same time being insufficient. It establishes a target for global ambition and serves as a guiding beacon to increase ambition in efforts to address the climate crisis.[89] It also facilitates the assessment of global climate action (in)effectiveness.[90] While insufficient to tackle the climate crisis, the collective target set by the Kyoto Protocol has also been useful in measuring progress toward the treaty objectives and allowed for further adjustment of control mechanisms.[91] A critical lesson learned is the necessity of defining global targets based on the best available scientific evidence to ensure alignment with environmental, human health, and human rights considerations and the need to revise them regularly based on new scientific evidence and evolving circumstances.[92]

3. The risk of regrettable substitution could delay or jeopardize efficiency

The Montreal Protocol underwent several amendments to incorporate new substances harming the ozone layer. The amendments were either due to substitutions with substances carrying similar risks or advancements in science demonstrating the need to include previously unconsidered substances.[93] The universe of plastic polymers is vast and expanding. Recent studies showcase that there are more than 16,000 known plastic chemicals, including more than 3,000 polymers and other substances.[94] Increasing evidence underscores the need to reduce current levels of overall polymer production to address the climate crisis,[95] safeguard human health,[96] uphold other planetary boundaries (including novel entities),[97] and ensure the enjoyment of human rights.[98] Although the future plastics treaty should prioritize action on some polymers of concern, it should also incorporate a separate article with obligations to address the overall levels of primary plastic polymer production. The treaty should consider the potential risk of substitution when addressing reductions on a polymer-by-polymer approach, considering the vast array of existing polymers in the market. The future instrument should also implement mechanisms to regularly review and enhance reduction measures in response to evolving science and conditions, including regrettable market adjustments and substitutions.

Additionally, negotiators should consider the risks associated with alternatives and substitutes when replacing plastic polymers. There is no universally agreed-upon understanding of what suitable alternatives and substitutes would entail. Any approach to substitution should incorporate the best available science and consider factors such as impacts on human health, human rights, and Indigenous Peoples' rights.[99]

4. Tradable allowances derail treaties' objectives

The 'cap and trade' scheme introduced by the Kyoto Protocol, later replicated at the regional level in the EU, has proven counterproductive in reducing GHG emissions.[100] In the case of polymer production, allowing countries to trade production allowances could pose significant risks. Plastic pollution is a global phenomenon, and pollutants travel far beyond national borders. For instance, relocating polymer production would merely transfer, rather than address or eliminate, the associated toxic impacts of the production process, characterized by the release of toxic and persistent chemicals that disproportionately affect frontline communities[101] and would not address other aspects of plastic pollution such as the severe overload of waste management systems. Microplastics and toxic pollutants associated with plastics are transported over long distances via air and water currents in ways that would make relocation of pollution inefficient to address the plastic pollution crisis. Moreover, any reductions in polymer production levels should be considered desirable rather than used to create credits available for additional production elsewhere, merely shifting the location of associated impacts. Current estimates of the necessary reduction in polymer production should be viewed as highly conservative, as they only account for one dimension of plastic pollution, such as climate impacts.[102]

5. Clear compliance and reporting frameworks are essential

Effective MEAs are characterized by clear reporting, effective compliance mechanisms, and facilitative approaches and measures to address non-compliance. Compliance provisions ensuring the implementation of production reduction targets are crucial for both global and national action. The Montreal Protocol's comprehensive compliance provisions, including incentives and disincentives among the non-compliance response measures available to the Meeting of the Parties, facilitate a coordinated process to assist countries in meeting their treaty obligations. Despite their level of detail, the compliance provisions in the Kyoto Protocol have not been fully utilized in practice, as countries can avoid reducing their national emissions but still 'meet' targets through market mechanisms. The Paris Agreement has reporting requirements but lacks measures related to compliance with emissions reductions, as it relies on voluntary commitments.

Although not analyzed here, compliance provisions under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)[103] are worth mentioning. CITES offers a useful model that supports implementation, brings countries back into compliance, and stops treaty violations when they are identified.[104] For example, if countries do not meet their obligations to ensure that permitted trade in a species is legal and sustainable, they may face a trade suspension.[105] Furthermore, failure to submit annual reports containing information needed to assess compliance with the Convention's obligations for three years in a row can also lead to a recommendation to suspend trade.[106]

Structuring Successful Obligations to Reduce the Production of Primary Plastic Polymers

Based on lessons learned from other instruments highlighted in this brief, Member States should consider, at least, the following elements to progressively reduce primary plastic polymers production and ensure the treaty is fit for purpose:

A mandatory global target

Member States should include a paragraph mandating Parties to reduce the global production of primary plastic polymers to achieve a defined and revisable global target. This global target should be placed in an annex, and it should include three elements: a baseline, expressed as the production levels of a specific past year to prevent production increases; a reduction goal, expressed as a reduction percentage from the baseline; and a timeframe for achieving the target.[107] This target should be subject to strengthening to bring it in line with new and evolving science on the impacts of plastic pollution.

It is crucial to align this global benchmark with the best available scientific evidence on reduction needs to address the various dimensions of plastic pollution and ensure the future plastic treaty is fit for purpose. Including this target in an annex allows for review as new scientific evidence emerges, with revisions intended solely to increase ambition. This global target should address aggregate levels of polymer production instead of focusing on selected polymers to prevent the risks of regrettable substitution (while incentivizing the prioritization of high-production volume polymers).

Obligations for Parties to take action at the national level to fulfill the global target

Considering the lessons learned from previous MEAs, national phasedown schedules with globally agreed-upon reduction targets that increase progressively over time are the most advisable approach. Member States should include an obligation mandating each Party to reduce the supply of primary plastic polymers to meet targets and timeframes included in an annex. In this context, supply should be defined as the sum of production and imports minus exports, akin to the Montreal Protocol's definition of consumption. However, supply is likely a better concept in the context of plastics, as consumption is used and defined differently at specific stages of the life cycle. The treaty can reserve the term 'consumption' in the way the Revised Zero draft currently uses it in obligations pertaining to other parts of the life cycle, such as problematic and avoidable plastic products and reuse, and instead use the word 'supply' to refer to the sum of polymers production and import minus exports.

The reduction targets should outline a step-by-step plan for reducing production over time and consist of three key elements.

1. Establish a baseline expressed as the supply levels of a specific year or the average over a period of years.[108] It is advisable to choose this specific year or period in the past or present to prevent an increase in production before entry into force of the instrument, which would jeopardize the treaty's efficacy.

2. Establish an initial target that expresses a freeze in production levels, meaning not increasing them from baseline levels.

3. After this initial freeze, the reduction targets should become more ambitious over time (e.g., if a 15% reduction is established by 2030, the reduction percentage set by 2040 should be higher). Once the phasedown schedule is fulfilled, supply levels should not increase. The treaty should include the flexibility for strengthening reduction targets in the phasedown schedules as new independent science emerges.

Establishing phasedown schedules can consider the common but differentiated responsibilities principle and the national capabilities of countries without resorting to NDCs, which have proven ineffective. The treaty can incorporate differentiated phasedown schedules for groups of countries. For example, one group may have a specific past baseline with a faster phasedown schedule, while another group may have a more recent baseline (meaning less substantial reductions) with delayed phasedown schedules. Groups of countries can be listed in Annexes, as other MEAs have done in the past. When defining the criteria for dividing countries into groups, Member States are advised to contemplate factors such as the current distribution of production capacity and the projected expansion in upcoming years.

While none of the MEAs analyzed above included national plans, they are strongly recommended for this treaty. National plans should outline the measures that Parties will undertake at the national level to implement the global target and corresponding phasedown schedules.[109]

Common measures that Parties must undertake to achieve targets

Member States should include treaty provisions outlining actions that Parties shall take to achieve both the global target and the national phasedown schedules. The list of actions should include, as a minimum, the following elements:

- A stop on the construction of new or expansion of existing production facilities

  This provision should mandate Parties not to issue new licenses or permits for constructing or expanding primary plastic polymer production facilities. The types of facilities subject to this measure should be listed in an annex, along with the dates on which the provision applies to each. This measure is crucial, as expanding production facilities could lock in production growth for several decades. Moreover, some facilities are already experiencing an overcapacity problem, where production capacity exceeds demand. This is particularly evident in the case of ethylene, a key monomer used almost exclusively for plastic production.[110] Therefore, ethylene production plants, including ethane crackers, should be among the first types of facilities listed in this annex.

- The removal of subsidies to primary polymer production

  This provision should mandate Parties to eliminate subsidies for producing primary plastic polymers. In establishing such provisions, Parties are advised to apply the subsidy definition outlined in Article 1.1 of the Agreement on Subsidies and Countervailing Measures (SCM Agreement) currently incorporated into the domestic legal regimes of 164 countries.[111] Member States are encouraged to integrate phaseout targets into their national plans and ensure transparency by disclosing existing subsidies, including their recipients, amounts, and intended timeframes for removal.

Reporting requirements

The reporting requirements for primary plastic polymers should be three separate reports. First, each Party should submit a report to the relevant treaty body after becoming a Party, containing data on production, imports, and exports of the specified baseline years. Second, the treaty should establish periodic reports (every year or two years) on production. In these periodic reports, Parties should provide the relevant body with statistical data of the preceding year(s) on annual production, imports, and exports of primary plastic polymers, including types and quantities, to facilitate monitoring progress toward the targets. It is advisable that this recurring report also include statistical data on monomers, particularly those primarily used in plastic polymer production, including ethylene, propylene, vinyl chloride, terephthalic acid, and styrene. Recurring reports should also cover information on subsidies and other fiscal incentives related to producing primary plastic polymers. A third report, less frequent, should include information on the effectiveness of national-level implementation, including its impacts and challenges. This information also contributes to assessing the treaty's overall efficacy and would facilitate Parties' access to relevant support in meeting their targets and obligations and potential treaty revision.

Compliance

The plastics treaty should incorporate compliance mechanisms to ensure the effective implementation of the global target, national phasedown schedules, and other treaty obligations.[112] Key elements include a primarily facilitative compliance approach that allows for developing measures that respond to non-compliance. The treaty should provide the governing body with a broad mandate for future decisions to streamline compliance procedures and respond to identified challenges. An Implementation and Compliance Committee should be established with diverse trigger mechanisms to identify and address non-compliance promptly.

These provisions should be coupled with key elements for the future treaty's implementation. First, financial and technical assistance should enable Parties to access the necessary resources and capacities to implement the phasedown schedules, including institutional strengthening, capacity and policy development, and establishing reporting mechanisms. Second, restrictions on imports and exports of primary plastic polymers between Parties and non-Parties are key to prevent Parties from circumventing treaty obligations through import and export with non-Parties and to incentivize non-Parties to ratify the instrument and/or implement the treaty regime.[113] Finally, the trade of primary plastic polymers with non-Parties should be contingent on non-Parties applying and enforcing standards equivalent to those established by the treaty. This ensures the same level of protection of human health and the environment as established by the treaty.[114]

Annex

Summary table of the comparative analysis between the models to control production in the Montreal Protocol, the Kyoto Protocol, and the Paris Agreement

Multilateral Environmental Agreement	Key Elements to Control Production	Description	Associated Articles	Key Implementation and Compliance Elements	Effectiveness
The Montreal Protocol	A Calculation Mechanism for a Harmonized Unit of Measurement	Levels of consumption (defined as the sum of the annual levels of domestic production and imports) minus exports of the controlled substances.	Article 3	• Two types of mandatory reports: An initial one when States become Party (based on baseline consumption levels) and annual reports detailing consumption data of controlled substances. • Mechanisms for addressing non-compliance are considered and approved at the first Meeting of Parties (MoP), with detailed procedures established by an ad hoc working group. • Parties failing to meet obligations must provide explanations to the Secretariat, which forwards them to the Implementation Committee for review, potentially resulting in recommendations for technical support or warnings of export cessation.	• The Protocol has effectively protected the ozone layer by controlling ozone-depleting substances (ODS). • Parties to the Protocol have phased out 98% of ODS globally compared to 1990 levels, leading to significant ozone layer recovery. • Recognized as a highly successful international agreement, the Protocol boasts universal adoption by 197 countries and has driven research and innovation for safer alternatives to ODS.
	Baselines	Consumption levels for a year or a period of years. They vary by substance and by groups of countries. Some are past years, while others represent future years, allowing production to increase before commitments take effect.	Articles 2A-2J; Article 5		
	Progressivity in reduction targets	National phasedown schedules for groups of controlled substances, each with increasing reduction targets over time. They all have reduction targets expressed as a maximum allowable percentage of the baseline, clear starting dates, and an established periodicity. The first target is always a freeze of production at baseline levels.	Articles 2A-2J		
	Special Conditions for Developing Countries	Developing countries are categorized based on their per capita consumption of ODS, entitling them to special provisions such as extended timelines for target reductions, establishing future baselines to increase production before reducing, and flexibility to increase consumption to fulfill essential uses and domestic needs.	Article 5, paragraphs 1, 8 qua (a), 8 ter (e)		

Multilateral Environmental Agreement	Key Elements to Control Production	Description	Associated Articles	Key Implementation and Compliance Elements	Effectiveness
The Kyoto Protocol	Baselines	GHG emissions from a single historical year (1990) for both collective and national reduction targets, which apply only to Parties listed in Annex I of the UNFCCC, with two exceptions: Parties can choose between 1990 or 1995 as the baseline year for some specific kinds of GHGs. while some countries can opt for a different historical period than 1990. Countries report their GHG emissions corresponding to baseline years after becoming a Party.	Article 3, paragraphs 1, 5, and 8	• Parties submit annual emissions reports and periodic national communications to show compliance. • The compliance mechanism involves facilitative and enforcement branches, addressing issues such as delayed submissions. • Failure to comply can lead to corrective measures, including additional emission reductions. • The Compliance Committee addresses issues mainly related to delayed report submissions and adherence to reporting requirements.	• The Kyoto Protocol met agreed targets, but global GHG reductions did not occur as countries with reduction commitments were only responsible for 18% of global GHG emissions. • Factors contributing to failure include withdrawal by the US and Canada, with the US's early refusal to commit to reductions. • Tradable allowances relocated emissions and relied on offsets.
	A collective, but not a global target	A number of countries (those under Annex I of the UNFCCC) must collectively reduce GHG emissions by 5% below 1990 levels from 2008–2012 and by at least 18% below 1990 levels from 2013–2020. These targets include a reduction goal, a baseline, and a timeframe for achievement.	Article 3, paragraph 1		
	National targets for selected Parties	The Protocol controls GHG emissions only for a specific group of Parties. Each target is expressed as a percentage of baseline levels, with specific periods for achievement. Some countries' targets permit increased production from historic levels rather than mandating reductions.	Article 3, paragraph 1; Annex B		
	Tradable allowances	Parties can achieve their emission reduction targets by obtaining 'emission reduction units.' This system allows countries to trade emissions allowances, enabling them to meet their targets without only reducing their own emissions. They can instead relocate emissions and circumvent national reductions. Parties can also fund emissions reduction projects in other countries and apply those credits to their own reductions or trade them (Joint Implementation and Clean Development Mechanism (CDM)).	Article 6; Article 12		

Multilateral Environmental Agreement	Key Elements to Control Production	Description	Associated Articles	Key Implementation and Compliance Elements	Effectiveness
The Paris Agreement	A global target	A global objective with a long-term temperature goal is to limit temperature rise to 1.5°C, with measures applicable to all Parties rather than only to select groups of countries.	Article 2, paragraph 1	• The Enhanced Transparency Framework (ETF) under the Paris Agreement replaces most of the UNFCCC and Kyoto Protocol's Monitoring, Reporting, and Verification framework by 2024. • The ETF includes national GHG emission reports, NDC progress tracking, climate impact data, and financial support details. • The Paris Agreement Implementation and Compliance Committee (PAICC) addresses non-submission of required information on NDCs, reporting, and financial commitments; lack of participation in progress review; and lack of transparency with Party consent, issuing information requests to non-compliant Parties.	• States' NDCs in the Paris Agreement, if fully implemented, are insufficient to limit warming to 1.5°C due to unilateral determination based on national ambition and capabilities. • The absence of collectively agreed NDCs creates an 'ambition gap' between current commitments and what is scientifically necessary, with estimates projecting a temperature rise of 2.5°C to 3.7°C by 2100.
	Nationally Determined Contributions (NDCs)	Countries unilaterally define their own GHG reduction commitments. Under NDCs, countries can put forward their own national proposals to contribute to progress toward the global target. Countries themselves determine the scope and robustness of NDCs. The Paris Agreement only requires countries to report their NDCs transparently every five years.	Article 3; Article 4, paragraph 2		

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99. It is important to note that the definition of primary plastic polymers encompasses both fossil-based and bio-based polymers. This is crucial because evidence has shown that bio-based plastic polymers do not necessarily provide environmental benefits and could pose significant risks to human rights, especially within the territories of Indigenous Peoples and local communities.

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101. Landrigan et al., 2023.

102. Durán Gonzalez, D. "Reducing Plastic Production to Achieve Climate Goals: Key Considerations for the Plastics Treaty Negotiations", (Center for International Environmental Law, 2023), available at https://www.ciel.org/wp-content/uploads/2023/09/Reducing-Plastic-Production-to-Achieve-Climate-Goals_Sept21_V5.pdf

103. Convention on International Trade in Endangered Species of Wild Fauna and Flora, March 3rd, 1973, 993 U.N.T.S. 243

104. (For further details, see CIEL's brief on Implementation, Compliance, and Reporting).

105. CITES, Notification to the Parties No 2022/045, (June, 2022), available at https://cites.org/sites/default/files/notifications/E-Notif-2022-045.pdf

106. CITES, Resolution Con. 11.17 (Rev. CoP18), available at https://cites.org/sites/default/files/document/E-Res-11-17-R18.pdf

107. Current estimations, although limited, already exist for a potential global target. For further information, please refer to CIEL's brief Reducing Production to Achieve Climate Goals: Key Considerations for the Plastics Treaty Negotiations.

108. It is crucial to note that primary plastic polymer production has experienced exponential growth annually. Selecting a period of years as a baseline, rather than the supply levels of a specific year, may lead to a lower point of reference, resulting in less substantial reductions.

109. See CIEL, IUCN and WCEL brief National Implementation Plans and National Action Plans: Key Elements to Consider in the Context of a Treaty to End Plastic Pollution

110. See CIEL's brief Plastic Polymers under the Full Life Cycle Approach: Key Considerations on the Scope of the Future Plastics Treaty).

111. For further details, see CIEL's brief on subsidies for plastic production.

112. For further information on the design of compliance mechanism under the future plastics treaty, consult CIEL's brief Implementation, Compliance, and Reporting: Key Elements to Consider in the Context of a Treaty to End Plastic Pollution

113. See CIEL's brief Non-Party Trade Provisions in Multilateral Environmental Agreements: Key Elements for Consideration in the Context of a Treaty to End Plastic Pollution

114. Ibid.

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